Physics 112

Application for Rewrite
All answers must be completed

Part I
Multiple Choice (6)
1. A car accelerates from rest to 90 km/h in 5.6 seconds. The rate of acceleration is:
   a. 17.86 m/s^2 b. 64.28 m/s^2 c. 4.46 m/s^2 d. 155.56 m/s^2

2. Donny drove to visit his girlfriend. If he averaged 80 km/h and drove for 180 minutes, how far away does his girlfriend live?
   a. 14400 km b. 240 km   c. 0.444 km   d. 2.25 km

3. Kelly drops a rock off of a bridge that is 50 m above the water. How long does it take to hit the water?
   a. 3.2 s   b. 2.26 s   c. 0.10 sd. 15.66 s

4. A car has an initial speed of 15 m/s. If the car's acceleration is 0.0 m/s^2, what is the speed of the car after three seconds?
   a. 44.1 m/s   b. 59.1 m/s   c. 0.0 m/s   d. 15 m/s

5. The change of displacement divided by the time interval is:
   a. acceleration   b. inertia   c. velocity   d. speed

Part 2 Short answer (5)

1. What is the difference between speed and velocity?
2. What are the units for acceleration?
3. Give an example of a situation where negative acceleration does not indicate that an object is slowing down.
4. Will a ball thrown in the air from a height of 50m hit the ground with a greater velocity if the initial velocity is 20m/s upward or downward? Support your answer.
5. Gina is headed west when she starts to slow down. State the direction of her velocity, acceleration, displacement and distance.
6. Sketch a position time graph of an object moving west and slowing down.
7. Sketch a position time graph of an object moving east and speeding up.
8. Sketch a velocity time graph of an object moving west and slowing down.

Part 3 Solve the following questions. Show your work.
1. Abigail drives her car east for 3 hours. If she is 258 km away when she stops what is her average velocity? If she drives back 200km to the west for 2 hours what is her average velocity for the trip?
2. How fast would an electron be moving if it took 10 minutes to travel 1.49 x 10^{11}m at a constant velocity?
3. Steven falls during a downhill skiing competition. If he slides for 46 meters while decelerating at a rate of 1.15m/s^2 before coming to a stop, what was his initial velocity?(3)
4. Evan is driving 130 km/h (yes, I know he is speeding). Francine is traveling at 108 km/h. a) What is Evan's speed relative to Francine (her point of view) if they are both going in the same direction? b)What is Evan's speed relative to Francine (her point of view) if Evan is traveling west and Francine is travelling east? (State a direction in your answer)
5. A car travelling at 60 m/s slows to 25 m/s in 4 seconds. a) What is the deceleration? b) How far did the car travel while decelerating? (4)
6. Sally Jo throws a rock in the air. If it is 15 m high after 2.2 seconds, what initial velocity did she throw the ball at? (3)
7. An astronaut drops a ball from a height of 2.4 m above the surface of the moon. If the acceleration of gravity on the moon is 1.62 m/s^2? how long does it take the ball to hit the surface? How fast is it going just before it hits the surface? (3)
8. Suppose you are driving along a highway at a speed of 108km/h and your brakes can slow you down at a rate of 6.00 m/s^2. If there is a road block 80m ahead will you get stopped in time. State how much room there is to spare or how fast you are going when you get there.
9. At the same time you are starting to stop in question #8 you meet crazy Carl going in the direction. If he is travelling at 90km/h determine how far away he will be when you get to the stopped.